

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-21 (Canceled).

Claim 22 (Currently Amended): A method for cleaning a surface of a conductive layer on a semiconductor substrate placed in a reaction chamber, comprising:

forming an insulating layer on the surface of the conductive layer;

forming a via hole in the insulating layer to expose a part of the conductive layer through a bottom of the via hole;

generating wherein plasma containing hydrogen, helium and argon ~~is generated~~ in the reaction chamber; ~~[[,]] and the surface of the conductive layer is cleaned by being reduced therewith, and~~

cleaning the part of the conductive layer exposed through the bottom of the via hole using the plasma,

wherein a residual organic material on the part surface of the conductive layer exposed through the bottom of the via hole is ashed by the plasma while the surface of the part of the conductive layer exposed through the bottom of the via hole is reduced.

Claim 23-24 (Canceled).

Claim 25 (Currently Amended): The method of claim 22 ~~[[24]]~~, wherein an upper insulating film is further formed on the insulating layer, and a wiring trench for exposing the via hole is formed in the upper insulating film, the exposed surface of the conductive layer being cleaned by the plasma after the upper insulating film has been formed.

Claim 26 (Previously Presented): The method of claim 22, wherein a density of the plasma is 10^{10} to $10^{13}/\text{cm}^3$.

Claim 27 (Previously Presented): The method of claim 22, wherein an electron temperature of the plasma is 0.7 to 3 eV.

Claim 28 (Previously Presented): The method of claim 26, wherein an electron temperature of the plasma is 0.7 to 3 eV.

Claim 29 (Previously Presented): The method of claim 26, wherein the plasma is generated by using a planar antenna.

Claim 30 (Previously Presented): The method of claim 26, wherein the plasma is inductively coupled plasma or magnetron plasma.

Claim 31 (Previously Presented): The method of claim 29, wherein the high density plasma processing is performed by forming a uniform electric field in the reaction chamber, the high density plasma being generated using microwave.

Claims 32-34 (Canceled).

Claim 35 (Currently Amended): The method of claim 22, wherein [[the]] plasma processing is performed under an atmosphere of a gaseous mixture ~~containing hydrogen and helium~~, and flow ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.

Claim 36 (Canceled).

Claim 37 (Currently Amended): A computer-readable storage medium storing software for performing a cleaning method for cleaning a surface of a conductive layer on a semiconductor substrate in a reaction chamber, the software when executed by a computer cause the computer to perform the cleaning method comprising:

generating plasma containing hydrogen, helium and argon in the reaction chamber;

and

cleaning the surface of the conductive layer by reducing the surface of the conductive layer with the plasma,

wherein an insulating layer is formed on the surface of the conductive layer, the insulating layer including a via hole to expose a part of the conductive layer to the plasma, the part of the conductive layer being cleaned by the plasma, and

a residual organic material on the surface of the part of the conductive layer is ashed by the plasma while the surface of the part of the conductive layer is reduced.

Claim 38-39 (Canceled).

Claim 40 (Currently Amended): The computer-readable storage medium of claim 37 [[39]], wherein an upper insulating film is further deposited on the insulating layer, and a wiring trench for exposing the via hole is formed in the upper insulating film, the exposed surface of the conductive layer being cleaned using the plasma after the upper insulating film has been formed.

Claim 41 (Previously Presented): The computer-readable storage medium of claim 37, wherein the cleaning is performed by a high density plasma processing at a low electron temperature, and the generating plasma is performed by forming a uniform electric field in the reaction chamber, a high density plasma being generated using microwave.

Claim 42 (Currently Amended): The computer-readable storage medium of claim 37, wherein the generating plasma is performed under an atmosphere of a gaseous mixture ~~containing hydrogen and helium~~, and ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.

Claim 43 (New): The method according to Claim 22, wherein a flow rate of argon is between 500 sccm and 3000 sccm, a flow rate of helium is between 50 sccm and 1000 sccm, and a flow rate of hydrogen is between 50 sccm and 1000 sccm.

Claim 44 (New): The method according to Claim 43, wherein a ratio of the flow rate of helium to the flow rate of hydrogen is between 0.7 and 1.75.

Claim 45 (New): The computer-readable medium according to Claim 37, wherein a flow rate of argon is between 500 sccm and 3000 sccm, a flow rate of helium is between 50 sccm and 1000 sccm, and a flow rate of hydrogen is between 50 sccm and 1000 sccm.

Claim 46 (New): The computer-readable medium according to Claim 45, wherein a ratio of the flow rate of helium to the flow rate of hydrogen is between 0.7 and 1.75.